

GS 77J01T21-01E

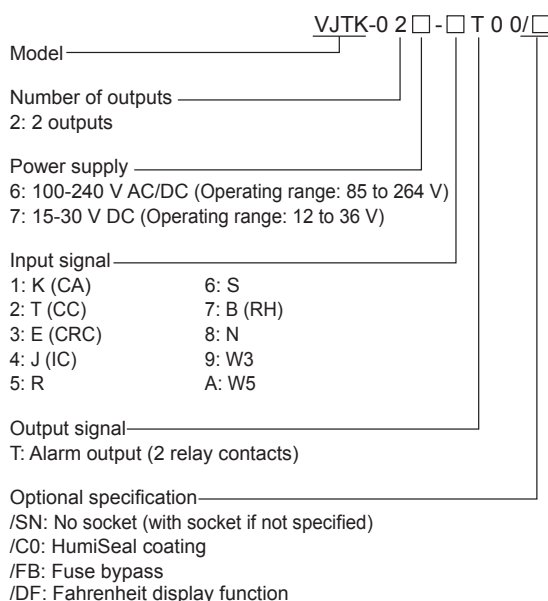
### ■ General

This plug-in type Limit Alarm for thermocouple input receives thermocouple signal.

- Each parameter setting can be changed using a PC (VJ77 PC-based Parameters Setting Tool) or the Handy Terminal (JHT200).
- For the Fahrenheit display, specify the option "/DF".



### ■ Model and Suffix Codes



(Note 1) "/C0" option: Polyurethane coating. The "/C0" (HumiSeal coating) option does not guarantee the coating effect though it is expected that the corrosion resistance for electric circuit is reinforced. And it is not able to submit coating test data.

(Note 2) "/FB" option: The primary power supply fuse is deleted, short circuit and ship it.

### ■ Ordering Information

Specify the model and suffix codes at the time of order.

If the input range and burnout are specified with the order, the specified values will be assigned before shipment.

For other setting items, the initial values shown below are to be assigned.

- Model and suffix codes: e.g. VJTK-026-1T00
- Input range (required item): 0 to 1000°C
- Burnout (required item): UP

### ■ Factory Default Settings

The initial values (factory-set values) are as follows.

- Input range: 0 to 1000°C
- Direction of alarm action: High-limit alarm (alarm 1), low-limit alarm (alarm 2)
- Direction of relay action: Energized under alarm condition (alarm 1 and alarm 2).
- Alarm setting: The value equivalent to 100% of input range (alarm 1), the value equivalent to 0% of input range (alarm 2)
- Hysteresis: The value equivalent to 3% of input range (alarm 1 and alarm 2)
- Alarm ON delay: 0 second (alarm 1 and alarm 2)
- Alarm OFF delay: 0 second (alarm 1 and alarm 2)
- Burnout (required item): UP
- Software filter: OFF

### ■ Input Specifications

Signal type: Thermocouple JIS C 1602 IEC 60584-1 (ITS-90) TypeK, T, E, J, R, S, B, N, W3<sup>(Note 1)</sup>, W5<sup>(Note 2)</sup>

Measuring unit: °C, K, °F<sup>(\*)</sup>

\*1: When specify the option code "/DF".

Note 1: Type W3 is W97Re3-W75Re25 (tungsten 97% rhenium 3%-tungsten 75% rhenium 25%). The abbreviation of ASTM E988 Standard.

Note 2: Type W5 is W95Re5-W74Re26 (tungsten 95% rhenium 5%-tungsten 74% rhenium 26%). The abbreviation of ASTM E988 Standard.

Input range:

Input type (TC)	Guaranteed range (°C)
JIS C 1602, IEC 60584-1 (ITS-90) TYPE K	-270 to 1372
JIS C 1602, IEC 60584-1 (ITS-90) TYPE T	-270 to 400
JIS C 1602, IEC 60584-1 (ITS-90) TYPE E	-270 to 1000
JIS C 1602, IEC 60584-1 (ITS-90) TYPE J	-210 to 1200
JIS C 1602, IEC 60584-1 (ITS-90) TYPE R	-50 to 1768
JIS C 1602, IEC 60584-1 (ITS-90) TYPE S	-50 to 1768
JIS C 1602, IEC 60584-1 (ITS-90) TYPE B	0 to 1820
JIS C 1602, IEC 60584-1 (ITS-90) TYPE N	-270 to 1300
Type W3	0 to 2300
Type W5	0 to 2300

Measuring span: 3 mV or more (converted into thermoelectromotive force)

Input resistance: 1 M $\Omega$  (during power on), 4 k $\Omega$  (during power off)  
 Burnout detectable current: 0.1  $\mu$ A  
 Allowable leadwire resistance: 500  $\Omega$  or less  
 However, when used with BARD-600, this value can be added to the BARD internal resistance.  
 Maximum allowable voltage:  $\pm 4$  V DC  
 Input adjustment range:  $\pm 1\%$  of span or more (Zero/Span)  
 Software filter: OFF, Low, Middle, High (default value: OFF)  
 When Low, Middle, or High is selected, a first-order filter equivalent to 100 ms, 300 ms, or 1 s is inserted in the input.

## ■ Output Specifications

Signal type: Relay contact  
 Output signal: NO contact output (contact turns on when energized), 2 points  
 Contact rating: 120 V AC/1 A, 220 V AC/0.5 A (resistance load); 30 V DC/1 A, 120 V DC/0.1 A (resistance load)  
 Direction of alarm action: High-limit alarm or low-limit alarm  
 Direction of relay action: Energized or de-energized under normal condition  
 Alarm setting range: 0 to 100% of input range  
 Setting resolution: 0.1°C, with four significant digits  
 Hysteresis setting range: 0 to 100% of input range  
 Setting resolution: 0.1%  
 Alarm ON delay: Condition monitoring time from the establishment of alarm conditions to its output. (For example, when an alarm ON delay is set to 1 second, alarm output is generated if alarm status continues for 1 second or more after the input value exceeds the alarm setpoint.)  
 Setting range: 0 to 999 seconds  
 Setting resolution: 1 second (However, about 0.2 second is to be added to the set time to prevent wrong operation.)  
 Alarm OFF delay: Condition monitoring time from the establishment of return-to-normal conditions to its output.  
 (For example, when an alarm OFF delay is set to 2 seconds, alarm output is released if normal condition continues for 2 seconds or more after the input value has returned to normal from the alarm status.)  
 Setting range: 0 to 999 seconds  
 Setting resolution: 1 second (However, about 0.2 second is to be added to the set time to prevent wrong operation.)  
 Indication of alarm action: The alarm indicator lamp (LED) on the front panel lights up if an alarm occurs. (2 lamps)

## ■ Items Available to Be Set

The following items can be set using a PC (VJ77 PC-based Parameters Setting Tool) or the Handy Terminal (JHT200):

Input type, input range, burnout, address number, baud rate, parity, data length, stop bit, protocol, direction of alarm action, direction of relay action, alarm setting, hysteresis, alarm ON delay and alarm OFF delay, input adjustment, software filter

## ■ Standard Performance

Accuracy rating:  $\pm 0.1\%$  of span

However, the accuracy is limited in the following cases.

If the input range obtained through thermoelectromotive force conversion is  $\pm 25$  mV or less, the accuracy is  $\pm 0.1\%$  of the span or 10  $\mu$ V, whichever is greater.

If the input range obtained through thermoelectromotive force conversion is greater than  $\pm 25$  mV but less than or equal to  $\pm 100$  mV, the accuracy is  $\pm 0.1\%$  of the span or 40  $\mu$ V, whichever is greater.

However, accuracy is not guaranteed for 0 to 400°C input to Type B.

Reference junction compensation accuracy:

Other than type R, S:  $\pm 1^\circ\text{C}$  ( $25 \pm 15^\circ\text{C}$ ),  $\pm 2^\circ\text{C}$  (except for terminal temperature  $25^\circ\text{C} \pm 15^\circ\text{C}$ )

Type R, S:  $\pm 2^\circ\text{C}$  ( $25 \pm 15^\circ\text{C}$ ),  $\pm 4^\circ\text{C}$  (except for terminal temperature  $25^\circ\text{C} \pm 15^\circ\text{C}$ )

Reference junction compensation is not performed for type B.

For type K, E, T, and N, the accuracy below  $-200^\circ\text{C}$  is obtained by multiplying the following coefficient (K).

$$K = \frac{\text{Thermoelectromotive force per degree near } 0^\circ\text{C}}{\text{Thermoelectromotive force per degree near measurement temperature}}$$

Burnout: UP, DOWN or OFF

Burnout time: Within 60 seconds

Effects of leadwire resistance change:  $\pm 15$   $\mu$ V or less for a change of 100  $\Omega$

Effect of power supply voltage fluctuations: accuracy range or less for the fluctuations within the allowable range of each power supply voltage specification

Effect of ambient temperature change:  $\pm 0.15\%$  of span or less for a temperature change of  $10^\circ\text{C}$

Response speed: 450 ms (Time to alarm output when the input change is 10 to 90% and alarm setpoint is 50%. When the alarm delay setting and hysteresis are minimum.)  
 If the software filter is on, add the following to the value above: Low: 100 ms, Middle: 300 ms, High: 1 s.

## ■ Environment Standard

RoHS Directive: EN 50581

## ■ Power Supply and Isolation

Power supply rated voltage: 100-240 V AC/DC  $\approx$  50/60 Hz or 15-30 V DC  $\approx$

Power supply input voltage: 100-240 V AC/DC (–15, +10%) 50/60 Hz or 15-30 V DC ( $\pm$ 20%)

Power consumption: 24 V DC 1.9 W, 110 V DC 1.9 W  
100 V AC 4.1 VA, 200 V AC 5.1 VA

Insulation resistance: 100 M $\Omega$ /500 V DC between input, output 1, output 2, power supply and grounding terminals mutually.

Withstand voltage: 2000 V AC/minute between input, (output 1, output 2), power supply and grounding terminals mutually.  
1000 V AC/minute between output 1 and output 2 terminals.

## ■ Environmental Conditions

Operating temperature range: –10 to 55°C (side-by-side mounting: –10 to 45 °C\*)

\* If the previous model (style S3.xx earlier) is installed together, the ambient temperature is 0 to 40°C.

Operating humidity range: 5 to 90% RH (no condensation)

Operating conditions: Avoid installation in such environments as corrosive gas like sulfide hydrogen, dust, sea breeze and direct sunlight.

Installation altitude: 2000 m or less above sea level.

Magnetic field: 400 A/m or less

Continuous vibration at 5 to 9 Hz: Half amplitude of 3 mm or less, 1oct/min for 90 minutes each in the three axis directions

Continuous vibration at 9 to 150 Hz: 9.8 m/s<sup>2</sup> or less, 1oct/min for 90 minutes each in the three axis directions

Shock: 98 m/s<sup>2</sup> or less, 11 ms, 3-axis 3 times each in 6 directions

Altitude: 2000 m or less above sea level

Warm-up time: 30 minutes or more after the power is turned on

## ■ Transport and Storage Conditions

Temperature: –25 to 70°C

Temperature change rate: 20°C/h or less

Humidity: 5 to 95% RH (no condensation allowed)

## ■ Mounting and Dimensions

Construction: Compact plug-in type

Material: Modified polyphenylene oxide resin (casing)

Mounting method: Wall or DIN rail mounting, or mounting using VJ mounting base

Connection method: M3 screw terminal

External dimensions: 29.5 (W)  $\times$  76 (H)  $\times$  124.5 (D) mm (including a socket)

Weight: Main unit: 100 g or less, Socket: 50 g or less

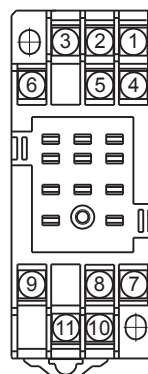
## ■ Standard Accessories

Tag number label: 1 sheet

Range label: 1 sheet

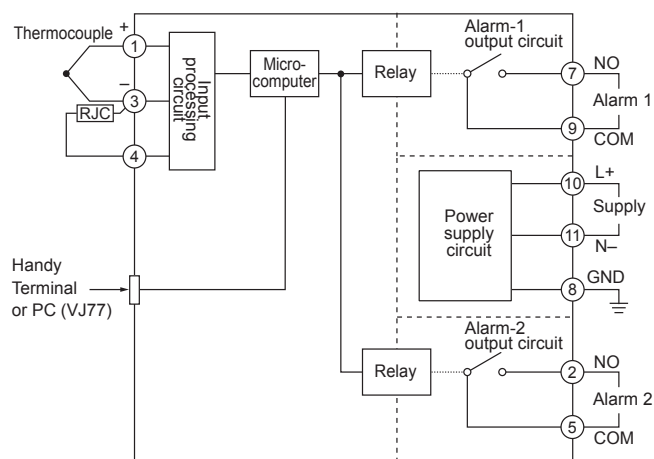
RJC Sensor (A1167HT): 1

## ■ Terminal Arrangement



Terminal No.	Signal
1	Input (+)
2	Alarm 2 (NO)
3	Input (–) <span style="border: 1px solid black; padding: 0 2px;">RJC</span>
4	Input (Reverse side of RJC)
5	Alarm 2 (COM)
6	N.C.
7	Alarm 1 (NO)
8	Ground (GND)
9	Alarm 1 (COM)
10	Supply (L+)
11	Supply (N–)

## ■ Block Diagram



## ■ External Dimensions

